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# वस्त्रादि–कार्बनीकरण के प्रति वस्त्रादि के रंग का पक्कापन ज्ञात करने की पद्धति–एल्यूमिनियम क्लोराइड

Indian Standard

# TEXTILES — METHOD FOR DETERMINATION OF COLOUR FASTNESS TO CARBONISING — ALUMINIUM CHLORIDE

ICS 59.080.01

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**BUREAU OF INDIAN STANDARDS**
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*November* 2003 **Price Group 2**

Chemical Methods of Test Sectional Committee, TX 05

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

This standard is technically equivalant to International Standard ISO 105-X01:1993 'Textiles — Tests for colour fastness : Part X01 — Colour fastness to carbonising: Aluminium chloride' issued by the International Organization for Standardization (ISO).

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

# TEXTILES — METHOD FOR DETERMINATION OF COLOUR FASTNESS TO CARBONISING — ALUMINIUM CHLORIDE

## 1 SCOPE

This standard specifies method for determination of resistance of colour of textiles in all forms to the manufacturing operation designed to remove vegetable impurities by a treatment with aluminium chloride at high temperatures. The method is mainly applicable to wool and textiles containing wool, particularly those containing acetate or polyamide fibres also.

## 2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of standard:

| *IS No.* | *Title* |
|---|---|
| 768 : 1982 | Method for evaluating change in colour (*first revision*) |
| 10251 : 1982 | General principles of testing textiles for colour fastness tests |

## 3 PRINCIPLE

A specimen impregnated with aluminium chloride solution is dried, rinsed and neutralized. The change in colour of the specimen after rinsing, neutralizing and drying are assessed with the grey scale (*see* IS 10251).

## 4 APPARATUS AND REAGENTS

**4.1 Oven**, for drying specimens in air at 60 ± 2°C and baking at 115 ± 2°C.

**4.2 Aluminium Chloride Solution,** (sp. gravity 1.037 g/ml), containing 51.4 g of $AlCl_3.6H_2O$ per litre.

**4.3 Ammonium Hydroxide Solution**, containing 2 ml of 20 percent $NH_4OH$ per litre.

**4.4 Test Control**

A dyeing of CI Mordant Red 3 (Colour Index 3rd Edition) treated with potassium dichromate.

The test control is prepared by entering a well wetted out pattern of wool cloth at 40°C into a dyebath containing 1 percent CI Mordant Red 3 (Colour Index, 3rd Edition), 10 percent sodium sulphate decahydrate ($Na_2SO_4.10H_2O$) and 3 percent acetic acid (300 g/l), all percentages being calculated on the mass of the pattern, at a liquor ratio of 40:1.

The dyebath is raised to boil in 30 min and boiled for further period of 30 min. If necessary, the dyebath is exhausted by careful addition of 1 percent to 3 percent acetic acid (300 g/l) or 1 percent sulphuric acid (sp. gravity 1.84 g/ml), well diluted with water. The bath is boiled for a further period of 15 min after addition of the acid. The dyebath is cooled down by addition of cold water and 0.5 percent potassium dichromate dissolved in water is added. The dyebath is raised to boil again and boiled for 30 min. The pattern is then removed, rinsed in cold, running tap water and dried.

**4.5 Grey Scale for Assessing Change in Colour,** complying with IS 768.

## 5 TEST SPECIMEN

**5.1** If the textile to be tested is fabric, use a specimen measuring 400 mm × 400 mm.

**5.2** If the textile to be tested is yarn, knit it into fabric and use a specimen measuring 400 mm × 400 mm or make a wick of parallel lengths 100 mm long and about 5 mm in diameter, tied near both ends.

**5.3** If the textile to be tested is loose fibre, comb and compress enough of it to form a sheet measuring 40 mm × 40 mm.

## 6 PROCEDURE

**6.1** Carry out the operations described below in **6.2** to **6.5** with the test specimen and test control specimen in parallel, in separate baths.

**6.2** Immerse the specimen in aluminium chloride solution (*see* **4.2**) for 15 min at room temperature (at a liquor ratio of 20:1). Squeeze it to leave in 80 percent of its own mass of solution.

**6.3** Dry the specimen by hanging it in an oven for 30 min, or longer if necessary at 60 ± 2°C. Then bake it by heating for 15 min at 115 ± 2°C.

**6.4** Rinse the specimen for 5 min in cold running tap water and then divide it into two equal parts. Dry one half by hanging it in air at a temperature not exceeding 60°C.

**6.5** Agitate the other half for 30 min at room temperature in the ammonium hydroxide solution (*see* **4.3**)(liquor ratio 40:1). Then rinse it for 5 min in cold running tap water and dry it by hanging it in air at a temperature not exceeding 60 °C.

**6.6** Assess the effect on the unneutralized test control specimen with the grey scale. If the change in colour is not equal to the rating '4-5 yellower' on the appropriate scale, the test has not been carried out correctly, and the operations described in **6.1** to **6.6** inclusive shall be repeated with a fresh test specimen and a fresh test control specimen.

**6.7** Assess the change in colour of each half of the test specimen with the grey scale.

## 7 TEST REPORT

The test report shall contain the following:

a) All details necessary for the identification of sample tested; and

b) The numerical rating for change in colour for both the rinsed and neutralized portions of the test specimen.

# ANNEX A

## (*Foreword*)

## COMMITTEE COMPOSITION

### Chemical Methods of Test Sectional Committee, TX 05

| *Organization* | *Representative(s)* |
|---|---|
| Textile Committee, Mumbai | Dr G. S. Nadigar (***Chairman***) |
| Ahmedabad Textile Industry's Research Association, Ahmedabad | Shri A. B. Shah |
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| Central Institute for Research on Cotton Technology, Mumbai | Dr (Shrimati) C. R. Raje |
| | Dr R. H. Balasubramanya (*Alternate*) |
| Clariant (India) Ltd, Mumbai | Representative |
| Indian Jute Industries' Research Association, Kolkata | Shri N. C. Som |
| Jayshree Textiles, Rishra | Dr K. K. Goswami |
| | Shri A. Nair (*Alternate*) |
| L. N. Chemical Industries, Mumbai | Shri Ketan L. Gandhi |
| Maniklal Verma Textile Institute, Bhilwara | Representative |
| Man-Made Textile Research Association, Surat | Dr Sandeep R. Naik |
| | Shri M. G. Patel (*Alternate*) |
| Ministry of Defence (DGQA), New Delhi | Shri P. P. Naidu |
| | Shri Rama Yadav (*Alternate*) |
| Ministry of Defence (R&D), New Delhi | Shri Nishkam Kasturia |
| | Shri S. C. Jain (*Alternate*) |
| National Textile Corporation Limited, New Delhi | Shri B. R. Verma |
| | Shri P. K. Home (*Alternate*) |
| Office of the Textile Commissioner, Mumbai | Shri S. K. Patra |
| | Shri R. A. Lal (*Alternate*) |
| Sunil Industries Ltd, Mumbai | Representative |
| Tex-n-Lab, Thane, Mumbai | Shri Ulhas Nimkar |
| | Shri S. Vardarajan (*Alternate*) |
| The Synthetics & Art Silk Mills Association Ltd, Mumbai | Shri V. S. Chalke |
| Suditi Industries Ltd, Navi Mumbai | Shri R. Chinraj |
| | Shri Rajendra Gaikwad (*Alternate*) |
| Textiles Committee, Mumbai | Shrimati M. V. Rane |
| Textiles & Engineering Institute, Ichalkaranji | Prof S. K. Laga |
| | Prof S. S. Chinchwada (*Alternate*) |
| The Bombay Dyeing & Manufacturing Co Ltd, Mumbai | Shri N. Satish Rao |
| | Shri A. S. Gore (*Alternate*) |
| The Bombay Millowners' Association, Mumbai | Shri S. V. Soudagar |
| | Shri Mahesh Sharma (*Alternate*) |
| The Bombay Textile Research Association, Mumbai | Shri A. V. Afini |
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| Wool Research Association, Mumbai | Shrimati G. P. Rane |
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| In personal capacity (*2, Shri Siddhi Vinayak Co-op Housing Society Veer Savarkar Marg Prabhadevi, Dadar, Mumbai*) | Shri M. D. Dixit |
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*Member Secretary*
Shri Arun Singh
Joint Director (TXD), BIS

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